II. Remarks

Reconsideration and allowance of the subject application are respectfully requested.

Claims 1-13 and 26-28 are pending in the application. Claims 1 and 8 are independent.

Claims 1-8 and 13-20 stand rejected as being unpatentable over Knuutila 937, Knuutila 489, Liu, and Hall, for the reasons discussed on pages 2-21 of the Office Action. Applicants respectfully traverse all art rejections.

The new prior art cited by the Examiner discloses an adaptive current limiter that monitors and adjusts the current drawn by the power amplifier in a PCMCIA wireless modem card according to a threshold "determined by one or more of the following: host power supply capability, the number of present Tx slots and the RF operational band" (column 3 line 65 to column 4 line 1).

However, this really misses the whole point. The present claims recite a "method for estimating additional uplink transmit power available for a subscriber station", whereas the primary reference cited (Knuutila et al. '937) describes a system in which the mobile notifies the system, which in turn notifies the base station, that for some reason (temperature of the power amplifier, need to transmit in more than one slot of each frame, etc.), the system should place the mobile in a particular power class. There are only a few

possible power classes and the goal isn't to fine tune the system's estimate of the available power margin. The need to transmit using more than one slot per frame rises because the power amplifier in Knuutila et al. '937 is only designed to operate at full power for one slot per frame, so if it is going to have to transmit more than one slot per frame it will need to reduce the power it transmits in each slot or it will exceed its specifications and possibly overheat. The need to transmit in more than one slot per frame arises when the subscriber station is sending data rather than voice.

This is really quite different from what is claimed in the subject application. The claimed invention comprises a method for increasing the accuracy of the base station's estimate of how much additional power the subscriber station could use to transmit without being driven over specification or being driven outside regulatory limits. In Knuutila et al. '937, all that the subscriber station is telling the base station is that it is to be considered to be in a particular power class, which gives only a rough estimate of the available power margin. It is not telling the base station how much additional power it has available before it hits a limit.

In Hall, the power measurement measured by the subscriber station is assumed to be accurate and is used to determine the power margin. The present application, on the

other hand, deals with the possibility that the power measurement made by the subscriber station is not accurate (see paragraph [0004] of the published application). See column 2 lines 36-47 and column 6 lines 27-34 of Hall. Hall fails to disclose using a fold back circuit to refine the estimated power margin.

Note that in Knuutila et al. '937 the messages sent by the mobile to the system (not the base station, incidentally as we claim) are not being sent to increase the accuracy of the power margin estimate. In Knuutila et al. '937 the messages are sent to change the "power class" of the mobile, which defines the maximum output power in each GSM band. There appear to be either three or four power classes (29, 33, 37, and 39 dBm for GSM 900 and 24, 30, and 33 dBm for GSM 1800 and 1900). Knuutila et al. '937 does not disclose messages sent by the mobile to change the "power level" of the mobile. In GSM there are many more power levels (18 spaced 2 dBm apart) than power classes, but they are sent from the base station to the mobile. There is nothing in Knuutila et al. '937 about estimating the power level based upon the power class messages sent by the mobile, which would be somewhat analogous to our claimed invention. Please see pages 2 and 3 of the attached Application Note.

Accordingly, the salient claimed features of the present invention are nowhere disclosed by the cited art,

whether that art is taken individually or in combination.

The undersigned hereby requests a personal interview with the Examiner to discuss the differences between the present claims and the newly-cited art. Therefore, the Examiner is respectfully requested to telephone the undersigned at the below number to arrange for an interview at a time convenient to the Examiner.

In view of the above, it is believed that this application is now in condition for allowance, and a Notice thereof is respectfully requested.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 625-3507. All correspondence should continue to be directed to our address given below.

Respectfully submitted,

/Richard P. Bauer/

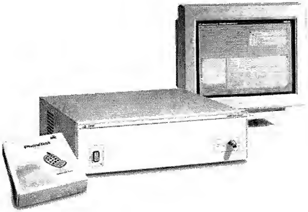
Richard P. Bauer
Attorney for Applicants
Registration No. 31,588

Patent Administrator
Katten Muchin Rosenman LLP
East Lobby, Suite 700
1025 Thomas Jefferson Street, N.W.
Washington, D.C. 20007

Application Note

AEROFLEX
A passion for performance.

How does the "Phase" of a mobile effect its testing strategy



During the evolution of GSM mobile there have been 2 phases of implementation.
The phase of the mobile defines the RF capability of the mobile and hence the way it is tested.

Introduction

During the evolution of GSM mobile there have been 2 phases of implementation Phase 1 and Phase 2. The phase of the mobile defines the RF capability of the mobile and hence the way it is tested. The phase of the mobile its transmitted to the network or test equipment as part of the class mark.

The class mark is the information that is passed from the mobile during the registration. This is used by the network (or test equipment) to identify the capability of the mobile. The rest of this article explains the differences in RF performance and features between the phases of mobiles. The following provides the details of this information covering the frequency allocations, power classes of mobiles, power levels.

Frequency Allocations

Phase 1

Phase 1 was the initial phase of mobile and supported P-GSM, GSM 1800 (often known as DSC) and GSM 1900 (often known as PCS). The following outlines the frequency plans for each of the bands

GSM Band	Channel Number Range	Mobile transmit and In MHz Basestation Receive Frequency In MHz	Mobile Receive and Basestation transmit Frequency In MHz
P-GSM 900 (Primary Band)	1 to 124	890 + 0.2 x channel number	Mobile Tx + 45 MHz
GSM 1800 (DCS)	512 to 885	1710.2+0.2 x (channel number -512)	Mobile Tx + 95
GSM 1900 (PCS)	512 to 810	1850.2+0.2 x (channel number -512)	Mobile Tx + 80

Phase 1 frequency Allocation

Phase 2

Phase 2 added the capability for additional channels in the GSM 900 band, known as E-GSM.

GSM Band	Channel Number Range	Mobile transmit and In MHz Basestation Receive Frequency In MHz	Mobile Receive and Basestation transmit Frequency In MHz
E- GSM (Extended Band)	0 to 124	890 + 0.2 x channel number	Mobile Tx + 45 MHz
	975 to 1023	890 + 0.2 x channel number-1024)	Mobile Tx + 45 MHz

Additional Phase 2 - Frequency Allocation

Power Class

The power class of the mobile defines the maximum output power level for the mobile in each of the GSM bands are shown below :-

GSM 900

Power Class	Maximum Power Level	Maximum Output Power
1	—	—
2	PL2	39 dBm, 8 W
3	PL3	37 dBm, 5 W
4	PL4	33 dBm, 2 W
5	PL5	29 dBm, 800 mW

GSM 900 Power Classes

GSM 1800

Power Class	Maximum Power Level	Maximum Output Power
1	PL0	30 dBm, 1 W
2	PL3	24 dBm, 250 mW
3	PL29	36 dBm, 4 W

GSM 1800 Power Classes

GSM 1900

Power Class	Maximum Power Level	Maximum Output Power
1	PL0	30 dBm, 1 W
2	PL3	24 dBm, 250 mW
3	PL30	33 dBm, 2 W

GSM 1900 Power Classes

Power Levels

The base station controls the mobile output power level by sending a power level (as a number) which the mobile then transmits. This is used to ensure that the optimum power level is received by the base station and maximises the battery life. The following are the power levels for each of the GSM bands and the standard test specification for each of the power levels.

GSM 900

Power Level	Nominal Output power	Normal Specification	
2	39 dBm	± 2	
3	37 dBm	± 3	
4	35 dBm	± 3	
5	33 dBm	± 3	
6	31 dBm	± 3	
7	29 dBm	± 3	
8	27 dBm	± 3	
9	25 dBm	± 3	
10	23 dBm	± 3	
11	21 dBm	± 3	
12	19 dBm	± 3	
13	17 dBm	± 3	
14	15 dBm	± 3	
15	13 dBm	± 3	
16	11 dBm	± 5	Phase 2 only
17	9 dBm	± 5	Phase 2 only
18	7 dBm	± 5	Phase 2 only
19	5 dBm	± 5	Phase 2 only

GSM 900 Power Levels

GSM 1800

Power Level	Nominal Output power	Normal Specification	
29	36 dBm	± 2	Phase 2 Only
30	34 dBm	± 3	Phase 2 Only
31	32 dBm	± 3	Phase 2 Only
0	30 dBm	± 3	
1	28 dBm	± 2	
2	26 dBm	± 3	
3	24 dBm	± 3	
4	22 dBm	± 3	
5	20 dBm	± 3	
6	18 dBm	± 3	
7	16 dBm	± 3	
8	14 dBm	± 3	
9	12 dBm	± 4	
10	10 dBm	± 4	
11	8 dBm	± 4	
12	6 dBm	± 4	
13	4 dBm	± 4	
14	2 dBm	± 5	Phase 2 Only
15	0 dBm	± 5	Phase 2 Only

GSM 1800 Power Levels

GSM 1900

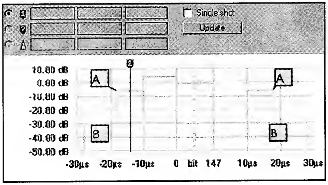
Power Level	Nominal Output power	Normal Specification
30	33 dBm	±2 dB
31	32 dBm	±2 dB
0	30 dBm	±3 dB
1	28 dBm	±3 dB
2	26 dBm	±3 dB
3	24 dBm	±3 dB
4	22 dBm	±3 dB
5	20 dBm	±3 dB
6	18 dBm	±3 dB
7	16 dBm	±3 dB
8	14 dBm	±3 dB
9	12 dBm	±4 dB
10	10 dBm	±4 dB
11	B dBm	±4 dB
12	6 dBm	±4 dB
13	4 dBm	±4 dB
14	2 dBm	±5 dB
15	0 dBm	±5 dB

GSM 1900 Power Levels

Burst Power Profile

The power profile test ensures that the GSM burst lies within a predefine power / time template. The power profile is not static with changes in power level. The following shows how the major points of the power profile changes for low power levels

GSM 900



Power burst profile definition for low power levels

Power burst profile definition for low power levels

Point A is defined as :--

- 6 dBc for Power Levels 15 and higher
-4 dBc for Power Level 16;
-2 dBc for power level 17;
-1 dBc for power level controls levels 18 and 19

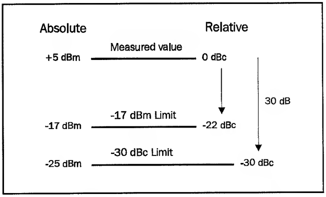
Point B is defined as :-

-30 dBc (dB with respect to the carrier) or -17 dBm (an absolute value in dB with respect to 1 mW), whichever is the higher.

The impact of this is that the lower limit of the mask can change dependent upon the actual power measured . The following are 2 examples :

Example 1

A mobile is set to PL19 (5 dBm) and has no error, the absolute measured power will be +5 dBm hence the -30 dBc power level equivalent to an absolute power -25 dBm (+5 - 30), and the absolute value of -17 dBm would be equivalent to -22 dBc (+5 - 17). Therefore the as -22 dBc is greater than -30 dBc the absolute

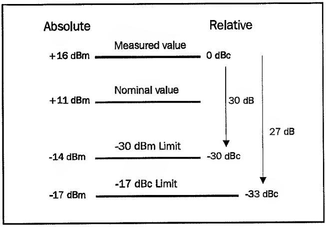


Example of power burst calculation for power level 19

Power Level 19 with No error then the -17 dBm limit is used

Example 2

If the mobile is set to PL 16 (i.e. +11 dBm) and has a error of + 5 dB (ie transmitting +16 dBm), then the -30 dBc value would be equivalent to -14 dBm, and the -17 dBm value would be equivalent to -33 dBc. Therefore the -30 dBc limit will be used.

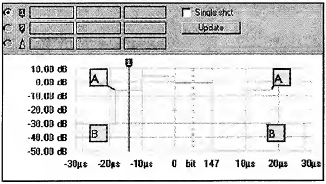


Example of power burst calculation for power level 16

Power Level 16 with a +5 dB error then the -30 dBc limit is used

GSM 1800/ 1900

The Power time template for GSM 1800 and 1900



The Power time template for GSM 1800 and 1900

The specification for GSM 1800 and 1900

Point A is defined as :-
-4 dBc for power level 11,
-2 dBc for power level 12,
-1 dBc for power levels 13,14 and 15

Point B is defined as
-30 dBc or -20 dBm, whichever is the higher.

CHINA Beijing
Tel: [+86] (10) 6467 2716
Fax: [+86] (10) 6467 2821
CHINA Shanghai
Tel: [+86] (21) 6282 8001
Fax: [+86] (21) 62828 8002
FINLAND
Tel: [+358] (9) 2709 5541
Fax: [+358] (9) 804 2441
FRANCE
Tel: [+33] 1 60 79 96 00
Fax: [+33] 1 60 77 69 22
GERMANY
Tel: [+49] 8131 2926-0
Fax: [+49] 8131 2926-130
HONG KONG
Tel: [+852] 2832 7988
Fax: [+852] 2834 5364
INDIA
Tel: [+91] 80 5115 4501
Fax: [+91] 80 5115 4502
KOREA
Tel: [+82] (2) 3424 2719
Fax: [+82] (2) 3424 8620
SCANDINAVIA
Tel: [+45] 9614 0045
Fax: [+45] 9614 0047
SPAIN
Tel: [+34] (91) 640 11 34
Fax: [+34] (91) 640 06 40
UK Burnham
Tel: [+44] (0) 1628 604455
Fax: [+44] (0) 1628 662017
UK Stevenage
Tel: [+44] (0) 1438 742200
Fax: [+44] (0) 1438 727601
Freephone: 0800 282388
USA
Tel: [+1] (316) 522 4981
Fax: [+1] (316) 522 1360
Toll Free: 800 835 2352

AEROFLEX
A passion for performance.

www.aeroflex.com
info-test@aeroflex.com

Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven and customer-focused.

Part No. 46891/855, Issue 2, 07/05